

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 13, 15-18, and 20-24 are pending in the present application, Claims 13, 15, 17, 18, and 20 having been amended, Claims 14 and 19 having been canceled without prejudice or disclaimer. Support for amended Claim 13 is found, for example, in canceled Claims 14 and 19. No new matter is added.

In the outstanding Office Action, Claims 13, 14, 19, and 20 were rejected under 35 U.S.C. §102(b) as anticipated by Ida et al. (U.S. Patent No. 6,537,801, hereinafter Ida); Claims 16-18 were rejected under 35 U.S.C. §103(a) as unpatentable over Ida in view of Sogawa (U.S. Patent Publication No. 2001/0044058); and Claims 21-24 were rejected under 35 U.S.C. §103(a) as unpatentable over Ida.

With respect to the rejection of Claim 13 as anticipated by Ida, Applicants respectfully submit that the amendment to Claim 1 overcomes this ground of rejection. Amended Claim 1 recites,

A biochip comprising:

a plurality of useful molecular recognition areas distributed with a determined layout to create a format of molecular recognition areas;

means for making optical position marks for each molecular recognition area, distributed with a determined layout to form an optical format, wherein the molecular recognition areas are arranged on the optical format according to a known relative positioning; and

means for determining said known relative positioning constituted by molecular recognition areas configured to receive specific biological targets arranged at specific and predefined locations of the biochip with respect to the useful molecular recognition areas, said specific biological targets to obtain fluorescent patterns.

Ida does not disclose or suggest every element of amended Claim 1.

Ida is discussed in the background section of the present specification, and suffers from several problems.

Ida describes a biochip that includes a plurality of molecular recognition areas and a device for reading such a biochip. In particular, Ida describes a first mechanical system for the use of an optical read head to scan a biochip with optical marks and slaving of the precise position of the optical head using this first mechanical system or a second more specialized mechanical system. This slaving of the position of the optical head with respect to optical marks is more commonly referred to as tracking for Compact Disks (CDs). Precise reading of fluorescence is possible due to this slaving system controlling the precise position of the optical head. Optical marking patterns placed on the biochip may be in the form of tracks.

Due to the optical format, it is possible to know if the recorded fluorescence information originates from a specific recognition area. Therefore, this requires specific patterns, for example to indicate passage from one recognition area to another. This also requires at least partial numbering of read tracks or absolute control of track skips when the biochip is being scanned. The fluorescence information can thus be recorded directly and correlated to a specific recognition area positioned on the biochip.

However, any fault in the relative positioning on the biochip between recognition areas and patterns forming the optical format is a source of error. For example, a positioning error on all recognition areas may show up an offset such that one track in the optical format is located on the boundary between two adjacent recognition areas. This type of defect creates a problem because it can cause read errors by assigning a fluorescence measurement to one or the other of the adjacent biological probes. Thus, there is a strong constraint on the technology for the production of recognition areas in terms of positioning on the substrate provided with its optical format. A positioning defect equal to or greater than the half-pitch of

the read tracks along the axis perpendicular to the axis used for tracking of tracks in the optical format, necessarily requires a corrective action that may make it necessary to scrap such a biochip.

Furthermore, the system in Ida for slaving the position of the optical head is complex both mechanically and electronically.

A final disadvantage in the system of Ida is the limitation of the sampling step, along the direction perpendicular to the tracks, at the track jump.

In the biochip of Ida, the optical format is not independent of the format of the molecular recognition areas. This is specified at col. 12, lines 49-54 of Ida, which states “the biochip 10 also comprises a network 120 of optical positioning marks associated with recognition areas.”

The invention defined by Claim 1 allows the optical format to be independent of the format of the molecular recognition areas.

Advantageously, for a non-limiting embodiment, the optical read head is not continuously slaved due to information supplied by optical format marks. Rather, the optical read head is allowed to pass along its predefined scanning path on the surface of the biochip under the control of its associated system to simultaneously record fluorescence information and positioning information derived from the optical format. Subsequently, once the fluorescence has been completely or partially recorded, each measurement is repositioned by computer on a fictitious biochip using the position information recorded during the fluorescence measurement.¹

More specifically, as explained in the present specification for a non-limiting example,

With the biochips used, relative positions of
molecular recognition areas with respect to the optical

¹ See, specification, page 3, line 18 to page 4, line 10.

format is known. Some specific targets were introduced during hybridising of marked biological targets. These specific targets enable the production of fluorescent patterns at specific and predefined locations on the biochip, for example at the four corners of the part located inside the area 5 (see Figure 1). These fluorescent patterns are used as marks and provide a means of knowing the relative position of the optical format with respect to the positions of the molecular recognition areas. The specific locations may be 4 area by 4 area matrices, each area having a side dimension of 30 μm and one area out of two being provided with biological probes capable of receiving specific targets (specific recognition areas). Obviously, the size of the patterns may be larger or smaller. These specific recognition areas may be arranged at random or not at random in the pattern. They may also have different intensities.²

Ida does not disclose or suggest the claimed “means for determining said known relative positioning constituted by molecular recognition areas configured to receive specific biological targets arranged at specific and predefined locations of the biochip with respect to the useful molecular recognition areas, said specific biological targets to obtain fluorescent patterns.” There is no description in Ida of how a relative position between the optical format and the molecular recognition area is determined. In Ida, it is necessary that the optical format and the recognition areas be positioned precisely with respect to each other (i.e., dependent on each other).

In view of the above-noted distinctions, Applicants respectfully submit that amended Claim 13 (and any claims dependent thereon) patentably distinguish over Ida.

Sogawa has been considered, but does not cure the above-noted deficiencies of Ida.

Applicants further traverse the rejections of Claims 21-24. Page 5 of the outstanding Office Action states “he does disclose an optical head capable of projecting light onto the

² Specification, page 12, line 20 to page 13, line 10.

biochip.” However, the position that the device to read the biochip of Ida can be modified to arrive at the claimed device is insufficient to establish a *prima facie* case of obviousness.³

Furthermore, the Office’s position with respect to *St. Regis Paper* is incorrect. MPEP 2144-III clearly states “legal precedent can provide the rational supporting obviousness *only if* the facts in the case are sufficiently *similar* to those in the application.” Emphasis added.

The Office does not apply the facts of *St. Regis Paper* to the present application, but instead applies a fact specific holding in this case as a *per se* rule. The Federal Circuit has emphasized that rejections that rely on *per se* rules while turning a blind eye to the fact specific inquiry required by 35 U.S.C. §103 rejections are improper, stating (emphasis in original):

The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention -- including all its limitations -- with the teachings of the prior art, flouts section 103 and the fundamental case law applying it...But reliance on *per se* rules of obviousness is legally incorrect and must cease. Any such administrative convenience is simply inconsistent with section 103, which, according to *Graham* and its progeny, entitles an applicant to issuance of an otherwise proper patent unless the PTO establishes that the invention *as claimed* in the application is obvious over cited prior art, based on the specific comparison of that prior art with claim limitations.⁴

In *St. Regis Paper Co.*, the court stated “Bemis has further demonstrated that the fourth element of the Lokey bag, its use of multiple layers to achieve the effect of many bags within one, has been known in the bag industry for many years.”⁵ However, in the present application, no such admission has been made, and the Office has provided no evidence that a biochip reading device with a second optical head configured to project second incident light onto the biochip has been arranged as claimed prior to the date of the claimed invention.

³See MPEP 2143.01-III stating that the “fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness.”

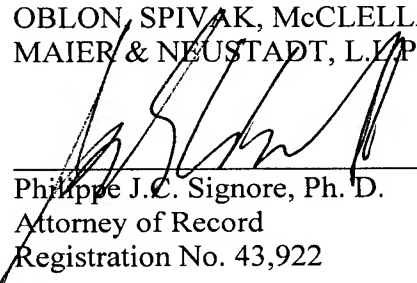
⁴See *In re Ochiai*, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995).

⁵ 193 USPQ 8, 11 (7th Cir. 1977).

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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